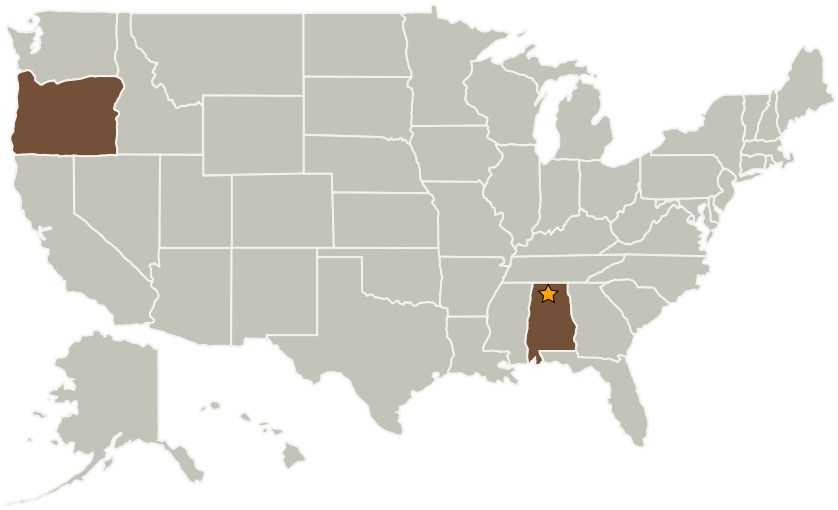
High Efficiency, Easy-to-Manufacture Engineered Nanomaterials for Thermoelectric Applications, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

In this Phase I SBIR program, high thermoelectric figure-of-merit (ZT) nanocrystal quantum dot (NQD) thermoelectric (TE) materials will be developed that have thermal efficiency properties far better than traditional bulk thermoelectric materials. The proposed TE materials improve performance by increasing electrical conductivity while reducing thermal conductivity. In the proposed work, TE devices will be fabricated from solidified quantum dot films that are formed from colloidally synthesized NQDs using consolidation and second phase precipitation. The overall goal of the program is to develop an advanced thermoelectric nanomaterial that will offer significant cost, flexibility, and performance benefits for NASA applications.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Marshall Space Flight Center(MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Voxtel, Inc.	Supporting Organization	Industry	Beaverton, Oregon

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Alabama	Oregon

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.6 Materials for Electrical Power Generation, Energy Storage, Power Distribution and Electrical Machines